CBCS SCHEME

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18EC46

Fourth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Microcontroller

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. With a neat block diagram, discuss the architectural features of micro controller 8051. **(10 Marks)**

b. With the help of a neat port pin circuit illustrate the working of port -1 and Port - 3 pins. **(10 Marks)**

OR

2 a. With a neat block diagram, describe the programming model of 8051. **(10 Marks)**

b. With the help of neat block diagram, explain the internal memory organization. **(10 Marks)**

Module-2

3 a. With suitable examples, explain the 5 different addressing modes of 8051. **(10 Marks)**

b. Write an ALP to multiply 25 by 10 using repeated addition. **(05 Marks)**

c. Write a 8051 C-program to toggle the bits of P1 port continuously with a 250 ms delay. **(05 Marks)**

OR

4 a. With neat block diagram and sequence of events illustrate storing and retrieving the return address. **(10 Marks)**

b. Write an ALP to exchange the lower nibble of data present in external memory 6000H to 6001H. **(05 Marks)**

c. Write an ALP to convert a packed BCD number into the ASCII numbers. Store the result in R5 and R6 respectively. **(05 Marks)**

Module-3

5 a. With a neat bit field description of TMOD register, discuss the different fields as well as different operating modes of timer operation. **(10 Marks)**

b. Write an assembly and C program to transfer the message "YES" serially at 9600 baud 8 bit, 1 stop bit. Do this continuously. **(10 Marks)**

OR

6 a. Illustrate with a neat block diagram and discussion the steps required for programming timer in model. **(10 Marks)**

b. Write an 8051 C program to send the two messages "Normal speed" and "High speed" to the serial port. Assuming that SW is connected to pin P2.0, monitor its status and set the baud rate as follows :
SW = 0, 28,800 baud rate
SW =1, $ 56K baud rate
Assume that XTAL = 11.0592 MHZ for both cases. **(10 Marks)**

Module-4

7 a. Discuss interrupt vector table in 8051, why do the put LJMP as the first line of code showing redirection of 8051 from the interrupt vector take at power up. **(10 Marks)**

b. Write a program in which the 8051 reads data from P1 and writes it to P2 continuously while giving a copy to the serial COM port to be transferred serially. Assume that XTAL = 11.0592 MHZ set the baud rate at 9600. **(10 Marks)**

OR

8 a. With a neat field description discuss the interrupt enable register. **(10 Marks)**

b. Write a program that continuously gets 8-bit data from P0 and sends it to P1 while simultaneously creating a square wave of 200 μs period on pin P 2.1. Use timer 0 to create the square wave. Assume that XTAL = 11.0592 MHZ. **(10 Marks)**

Module-5

9 a. With a neat interfacing block diagram. Write a AL program to interface an LCD display with 8051. **(10 Marks)**

b. With a neat interfacing block diagram write a ALP to interface a stepper motor to 8051 to rotate clockwise. **(10 Marks)**

OR

10 a. Showing the interfacing block diagram with DAC, write C program to generate triangle waveform. **(10 Marks)**

b. With a neat interfacing block diagram write a 'C' program to control the speed of stepper motor to rotate in anticlockwise direction. **(10 Marks)**

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